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# The Curability of Locomotor Ataxia and the Simulations of Posterior Spinal Sclerosis.

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NOTWITHSTANDING the rarity of the central spinal or cerebro-spinal lesion, symptomatically revealed, chiefly in ataxia of the motor mechanism of the spinal cord or medulla oblongata, and the belief of incurability of this affection, which took possession of the professional mind, especially after the definite earlier recognition of sclerosis of the prosterior columns had been satisfactorily confirmed by repeated post-mortems, and which, like the hopeless prognoses of phthisis, after the discovery of its relation to tubercle, became a settled conviction, some late results of treatment in this affection, if we are warranted in diagnosing its existence without the final autopsic sign being added to ante-mortem evidence, must lead us to inquire whether posterior spinal sclerosis is not really curable in certain stages and at a certain age, or whether it has not its counterfeit of symptoms, whose spurious character only the pathologist and not the clinician can determine.



I am aware that the wide-spread prevalence of latent syphilis, the insidious character of the initial venereal lesion in many cases, followed by subsequent grave central nerve implication, as all competent observers in neurosyphilology concede, will furnish a ready conjectural explanation of curability in the cases which have recovered; but he jumps at conclusions, and but cuts the Gordian knot who thus reasons. He does not satisfactorily sever the tangled clinical cord, for if the adneural depositions of the luetic

virus may be removed from the interstices of the strands of spinal nerve fibres and the arterial degenerations known to take place in the brains of syphilitics and elsewhere, may be regenerated and repaired under specific anti-venereal treatment, why may not the specific sclerotic induration itself, which specially characterizes the disease now under consideration, be capable of removal or arrest by a judicious therapy, permitting of the re-establishing of old, or the vicarious substituting of new channels of conduction for motor impulses? Especially if the not easily controverted later conclusions of Erb, as to the venereal etiology of tabes dorsalis, are to be regarded as well-founded; he having found reasonable evidence of the existence of syphilis in ninety-one per centum of the last hundred cases studied by him. In the study of his second hundred cases of tabes dorsalis, Prof. Erb makes the following statement as regards the etiology of this disease:

> Of these cases there was only nine per cent. in which previous syphilitic infection could not be proved; with positive secondary syphilitic symptoms 62 per cent.; with chancre, but without definite secondary symptoms, twenty-nine per cent.; or, in all, ninety-one per cent. of these cases possessed a syphilitic history. In relation to the time elapsing after syphilitic infection before the appearance of tabes, he found that in sixty-nine of these ninety-one cases tabes appeared within fifteen years after infection, in fifteen cases in the following five years, and in only six cases later than this. In a careful examination of twelve hundred men over twenty-five years of age who had no symptoms either of tabes or of syphilis, he found 77.25 per cent. uninfected and 22.75 per cent. infected in early life. From this it follows, according to the author, that almost no one becomes tabetic who has not at first been syphilitic. Of thirteen tabetic females, four were free from syphilis, in three it was doubtful, four had had positive secondary syphilitic symptoms, one probably syphilitic, and one a chancre. From the above Prof. Erb concludes that syphilis is one of the most frequent causes of tabes dorsalis, if not the most frequent. —*Centralb. f. d. Med. Wissen.*, December 15, 1883.

We may here also record our own conviction that syphilis, immediate or remote, plays a most important part as an indirect causative influence in the production of both spinal and cerebral sclerosis, and that when the syphilis has been acquired by the individual, the hopeful

issue of such a case is better assured than when the disease has been hereditarily transmitted. But the immediate (precipitating or determining) cause, in our cases, has been damp cold, or its equivalents.*

It is not strange that syphilis should be so important a causative factor in tabes and its simulations, when we consider how prevalent syphilis is in either its direct or hereditary and attenuated forms, and how diffusible and insidious in many ways, needless here to mention, its virus is.

We cannot demonstrably answer this question in regard to the curability of locomotor ataxia because, thus far, no post-mortems afforded by deaths from intercurrent causes have yet been made to confirm or deny it. We can only decide the question by analogy, on the general principles of neural pathology, and in the affirmative from what we know of vicarious nerve function, under stress of gradually invading disease and imperative demand of function, and the reparative power of nerve (motor and sensory) under certain circumstances.

These considerations should make our minds receptive to the teaching of late clinical lessons, that we may learn, if possible, to what they may likely lead in the not remote future; and if they shall conduct us clearly to the conclusion that posterior spinal sclerosis is susceptible of cure (and the indices now point that way), practical medicine will have added another signal therapeutic triumph to the many marvelous successes of the last four decades; a triumph as great as the mastery over malaria, syphilis or rheumatism, which not long ago were *approbriæ medicinæ.*

If absent patellar tendon-reflex, or the loss of the quadriceps extensor femoris clonus, be the sign essential of posterior spinal sclerosis, a sign which, notwithstanding our humble dissent, has received the sanction of the highest neurological authority, then have we certainly

* Over-bodily activity and sudden cooling off, getting wet and chilly in a cold rain, lying on the ground or sitting on a cold stone step after violent exercise, etc.

seen recoveries take place from sclerosis of the columns of Burdach. If superadded to the knee phenomenon, the coexistence of the characteristic ataxic gait, fulgurant pains, femoral anæsthesia and the peculiar illusory feet sensations, the inability to stand with eyes closed and feet together, and tactile inco-ordination without occipital pain or other head symptoms, are certainly significant of sclerotic implication of the posterior root zones, then have we to record recoveries from true locomotor ataxia. But we have seen no case of dorsal tabes recover with either glossal hemiatrophy; small, unequal or tardily moving pupils; laryngeal or pharyngeal crises, superadded to the aforenamed symptoms. When the pharyngo-laryngeal and gastric crises set in, or when the cervical cord at the point of origin of the phrenics, or when, further above, the pneumogastrics are implicated, the final crisis which shall close the singular career of this remarkable affection is close at hand, and we cannot hope to arrest the final ending of this malady. Nevertheless, even when thus approaching the end, as some of us have seen, either spontaneously or aided by our art, remissions sometimes occur, which should at least not leave us hopeless of some day effecting prolonged and even permanent intermissions in the gravest and earliest symptoms.

Indeed, the writer has lately seen under fronto-cervical and cervico-brachial galvanism, persistently employed, the altered and embarrassed handwriting become again round, regular and natural in style; all the rounded letters which were so badly formed, correctly made, and under the same treatment, the lost verbal co-ordination regained. The lost power to pick up small objects, to easily find the nose tip with the finger ends, to co-ordinate complex phalangeal movements and the peculiar visual defects, we have seen apparently more or less improved under treatment. If improvement be demonstrable, why may not entire arrest of symptoms and a cure in the earlier stages of this affection be possible?

Dr. G. M. Hammond (*Journal of Nervous and Mental*

*Diseases*, for July, 1883), reports a case in which the lost tendon-reflex partially returned, with marked improvement of all the tabetic symptoms, which had appeared in January, 1882, in an ataxic, with a previous history of syphilis and inebriety. In the discussion, Dr. Wm. A. Hammond stated that he had seen a similar case in which the tendon-reflex had markedly returned, especially in one knee, and most of the ataxic symptoms had disappeared.*

The writer does not believe that these evidences are sufficient alone to indubitably establish the existence of posterior spinal sclerosis, though they plainly indicate locomotor ataxia, as we often see it clinically presented; and point to a condition of the spinal cord, which, if it proceeds to dissolution, is found on post-mortem to be one of sclerosis of the columns of Burdach and Goll. But if the patient recovers, as has several times happened under our own observation in cases of recent origin, promptly treated, no cadaveric light illumine's diagnostic conjecture, as to the causative pathology of the symptomatology.

There was a time when, if a patient recovered of a pulmonary cavity, hacking cough, purulent expectorations, emaciation and night sweats, the case was regarded as not true phthisis. The one confirmatory symptom and unerring sign of correct diagnosis was lacking in the absence of the necropsy and necroscopic testimony—so are we now in regard to locomotor ataxia. "Locomotor ataxia is posterior spinal sclerosis and posterior spinal sclerosis is incurable," hence we are not satisfied to call the symptom grouping of locomotor ataxia, *true ataxia*, unless the case progresses unfavorably and we get or have in reasonable prospect the final microscopic sign. Yet there are cases, exceptional, it is true, which appear to recover after presenting most, if not all, of the evidences upon which, in other cases, we have been accustomed to give the

* Dr. Putnam, at the same time, referred to like cases reported by Baecker and Schuster; the latter's case having been seen by Erb, and presenting on post-mortem the characteristic sclerosis.

unfavorable prognosis, and which the subsequent dead-house revelations have confirmed.

Some of these cases have presented in our own experience, within a comparatively recent period, and these it is our purpose to here record, for the lesson of caution, which their recovery may teach others respecting the sometimes uncertain prognostic significance of some of the signs of tabes dorsalis; and possibly the results in these cases may serve as a lesson of some real value in neurotherapy.

Recent clinical observations force us to the conclusion, from which we cannot escape, that not only posterior spinal sclerosis, but multiple cerebral sclerosis is either actually curable, or that they both have such symptomatic counterfeits, as to render it impossible to distinguish the real from the genuine diseases during life.

The following apropos cases, as illustrations of conditions symptomatically counterfeiting disseminated sclerosis of the anterio-lateral columns and brain, have been lately reported by Westphal. It will be observed that both cases were sufficiently grave to reach even a fatal termination, without affording the usual post-mortem evidence of organic nerve induration, to which the sclerotic symptoms have hitherto been ascribed. In Westphal's cases (*Archiv f. Psych.* Bd. xiv., p. 87):

There was paresis of the muscles of the extremities, the trunk and the neck, with rigidity of the muscles, and as a result of this, delayed and difficult movements; there were tremors when voluntary movements were made; there was "scanning speech" (in one case only, in the other it resembled rather the speech found in bulbar paralysis); sensory disturbances were slight and transient; the patellar reflex was evocable, and also the paradoxical contraction; and there were headache, vertigo, apoplectic and hemiplegic attacks, and mental symptoms, particularly dementia. Nystagmus was an important omission, but Westphal's experience is that it is frequently absent, and in its place there was an abnormality in the movements of the ocular and facial muscles; the muscles responded slowly to the stimulus of volition, and the movements when commenced were slow in execution. This was well seen in the length of time it took to open and close the eyes. Both cases terminated fatally after a very chronic course. In one case a careful examination failed to reveal any cerebro-spinal lesion, in the other the cerebral pia matter was

somewhat œdematous, the convolutions small, and the white matter of very firm consistence; but there was not any sclerosis, in the ordinary acceptation of the word. In one of the cases reported in this paper, the paradoxical contraction was observed not only in the tibialis anticus, but in the flexors of the knee-joint, in the supinator longus of the forearm, in muscles of the wrist and finger-joints. Westphal concludes from these two cases that there is a general neurosis (which, for want of a better name, he calls a pseudo-sclerosis (which cannot be distinguished, either in its symptoms or its course, from the disease known as multiple cerebro-spinal gray degeneration, or sclerosis.

And now Desnos contradicting the late positive statement of Debove, that sclerotic lesions of the spinal cord, existing at the time when lancinating pains are experienced, preclude any hope of recovery, affirms that there are cases in which the lesions existing in the posterior columns of the cord are curable, and in support of his affirmation, he rélates a case of syphilitic tabes, in which the pains were very severe and the inco-ordination marked, which was cured; at least, all the symptoms were made to disappear in five weeks, by iodide and bromide of potassium with the protoiodide of murcury. Referring to ataxia, reported by Dr. Cadiat, in which the autopsy showed a simple congestion of the cord without sclerosis, Dr. Desnos regards his case as one of that kind.*

Dr. Philip Zenner, of Cincinnati, has also lately reported in the *Cincinnati Lancet and Clinic*, cases of recovery from well-marked symptoms of locomotor ataxia; and Erb, in his work on diseases of the spinal cord, reported two cases of locomotor ataxia as about cured. One of these, in whom the usual symptoms, anæsthesia, ataxia, etc., had been manifested, and later disappeared, excepting a slight bladder trouble, after an apparent recovery of about eight years, suddenly died of acute poisoning. An examination of the cord made at this time revealed the degenerative changes in Burdach's columns characteristic of this disease. So, in this case, the symptoms had disappeared, while the pathological changes, which probably produced them, remained. Here

* Annales de Dermatologie et de Syphiligraphie, November 25, 1883.

we must attribute the improvement as Dr. Zenner, from whom we extract this reference, does, to vicarious function; certain nerve-fibres in the cord assuming the function of those which had been destroyed.

If there be, as maintained by M. Déjérine, a *nervo-tabes peripherique* as contradistinguished from *tabes médullaire*, and of this fact M. Déjérine's cases recorded in *La France Medicale*, Oct. 30, 1883, and the negative results of some post-mortems reported by Dr. Walter Kempster last year to the Chicago Medical Society, the curability of certain forms of locomotor ataxia may be regarded as an assured fact.

Indeed, clinical observation does assuredly establish the curability of the symptom grouping, which we have been accustomed to regard as locomotor ataxia; all that is lacking being the cadaveric affirmations of diagnostic accuracy, and this we cannot have in recovered cases. M. Déjérine's two recorded cases presented the characteristic fulgurant pains, inco-ordination, absent knee-jerk, anæsthesia, analgesia and retarded perceptions, while autopsy revealed no central lesion; the cutaneous nerves only showing the usual results of peripheral neuritis.

We are probably on the threshold of a fuller appreciation of the peripheral nerve changes in tabes dorsalis, through the researches of M. Déjérine, and the successful therapeutics of this affection, of Engelskjön, Rumph and others.

Déjérine in a communication previous to the one just referred to, observes that sensation derangements were varied under the same central lesion; and the central ganglia being healthy, the peripheral nerve changes were "not dependent upon any morbid condition of their trophic centers." In two of Déjérine's cases of well-marked ataxia with absent tendon reflex, lightning pains and crises and definite areas, over trunk and limb, of anæsthesia and analgesia, the usual central changes were found, but in addition, there were "grave changes in the region of impaired sensation." In one case the nerve trunks presented exactly those appearances which are ordinarily

seen some months after section; very few of the never fibres having the normal physiological qualities. In another case, that of a woman aged fifty-five, who had pronounced anæsthesia of the legs, the cutaneous nerves showed extensive degeneration, indicative of an essential parenchymatous neuritis. The anterior roots were perfectly healthy, but the posterior roots between their ganglia and the cord were markedly altered. Below the ganglia, however, that is, between them and the point of coalescence of the anterior and posterior elements of the mixed nerve, no such changes were to be found, and the ganglia themselves were also healthy. Then we have Langenbach's (for science, fortunately fatal,) case of nerve stretching, to enlighten us. Though disturbances of sensation and disorders of locomotion, identical with the symptoms of tabes dorsalis existed during the life of the patient, no central change was found in the spinal cord. Death occurred in this case after a second stretching, apparently from chloroform.

Thus we may form a hopeful prognosis in some of these cases, if our treatment appear to progress satisfactorily, upon the supposition that the lesion may not always be central, especially if, in addition to favorable curative tendencies, we find no pupil or speech defect to indicate certain cerebro-spinal diffusion of sclerosis. The symptoms of tabes dorsalis may undoubtedly be due sometimes, at least, to multiple peripheral neuritis, if we may trust the researches of Pierrot, Déjérine, Buzzard, Gowers and the autopsic revelations of Langenbach.

There is undoubtedly a conjectural presclerotic stage in sclerosis posterior, which is amenable to treatment, especially to peripheral galvanism and hot pediluvia, associated with iodide of potassium. In this category we place those cases which, receiving amelioration under this treatment, pass from observation of the neurologist as not cured, but greatly improved, before he has made his final and definite diagnoses. Such are cases like the following:

M. F., a large man, aged forty-five years; by occupation a

wholesale merchant; ordinary weight, 225 lbs.; came under treatment, March 1st, 1883; complaining of unsteadiness of gait, uncomfortable numbness in lower limbs, actual anæsthesia, gluteal and plantar, and absent tendon-reflex, and a long antecedent history of a never very active form of syphilis. No head symptoms of any significance. The ground feels to him as though he were walking on a cushion and he stands with his feet apart, and walks as though he was on an unsteady ship.

This man improved much under descending galvanism, from motor aria of head to lumbosacral spine, and feet static electricity to anæsthetic arias, kilium iodium and hot baths, which he took at home and at Hot Springs. His trouble began about two months before I saw him. He was under treatment from March 1st, to middle of April, 1883, and continued with ameliorated symptoms without other treatment than hot baths, till early part of February of the present year, when he returned in as bad a condition as ever. I diagnosed this condition as impending tabes dorsalis, and made, in mental reservation, a hopeful prognosis, conditioned on persistence in the treatment instituted, which, however, has not been and will not be carried out. Afterwards, the patient's symptoms so improved as to relieve his mind of the fear of paralysis for which he had consulted me. The patient is a man who is given to trying novelties, having tried Turkish baths, magnetic healers, etc. The galvanic belt and the mechanical massage delusion will probably complete the hopelessness of his case.

M. G., aet. thirty-two; a sporting professional; tall and slender; weight, about 165 lbs.; spreads his legs when he stands; walks with a jerk and unsteady step; inclined to fall when eyes are closed, and cannot, with shut eyes, easily and promptly find the tip of his nose. Has had syphilis remotely. Has no lancinating pains, but feels as though the ground sinks down when he walks. Under treatment, Nov. and Dec., 1883, as in a previous case, with bromide added for insomnia complication. Compelled by his

occupation to take too much exercise, he was advised to go to hospital. Improved some under rest; but symptoms have returned now, and he is doing nothing but awaiting a more convenient opportunity to come under treatment and rest at the same time.

T. Z., a young married man, age thirty-six; clerk of a large corporation; was under treatment, already indicated, in March, April, May and June of 1883, for all the symptoms of dorsal ataxia, except the lancinating pains. The pains in his case being of a vaguely rheumatic character. A short residence at Hot Springs, with baths daily, after the home treatment, seemed to complete his cure, so he thought. In February of the present year, he came again under observation with all former symptoms much ameliorated. In fact, but little of them remained. He confessed to no specific disease at any time; but iodide of potassium in the morning, and protoiodide of mercury at night, were directed to be continued. At present writing he regards himself as well, but he still balances himself somewhat when he walks.

On February 2nd, 1883, K. J. O., a young married man was seen by Dr. Mudd and myself. We concurred that the symptoms were those of ataxia, and they were all characteristic, except the lancinating pains. They came suddenly. Ergot, iodide and bromide were given with arsenic and galvanism. No immediate benefit appeared; but a residence at Hot Springs and baths seemed to effect a cure.

Dr.—— a dentist, aet. sixty, has had for three years past all symptoms of spinal ataxia, including the lancinating pains, uncertain jerking step, contracted pupils, embarrassed and slow speech, absent tendon-reflex, falls forward if eyes are shut and feet placed together, fails to approximate nose tip with finger tips when eyes are shut, and has evidences of arthropathic changes. Has so markedly improved under hot baths and static electricity to extremities and spine, with constant cephalic galvanism to head and internal treatment, that he went away hopeful of recovery. We did not

endeavor to dispel the illusion. He had previously been treated for chronic rheumatism.

The incompleteness of this paper requires an apology. It was intended to be read before a medical society, where, in the discussion of the subject, some points not herein touched upon, might have been more fully elaborated. Want of time now forbids extending the paper to the limit that the merits of this subject would seem really to require.

Methods of treatment and the *rationale* thereof, together with the record of some other cases, including some clinical illustrations of amelioration in cerebral and anterior spinal sclerosis are reserved for a subsequent communication.

## Case of John C.— Illustrating Secondary Neuratrophic Phobias.* By C. H. Hughes, M. D., St. Louis.

John C., Act. 52, of spare build, height five feet eleven inches, weight one hundred and forty pounds, blue eyes, dark (now gray) hair, of Irish birth and by occupation, most of his life, a hotel porter, is married and the father of three children.

He has never been much sick so as to be confined to bed. Has had spermatorrhœa, and been treated for it in various ways without material benefit.

He is a man of mediocre intelligence, steady in his habits, and never used whisky or tobacco.

He has now cutaneous anæsthesia in face, arms, thighs and hands and intense burning sensations in feet. Eats sparingly and sleeps badly. He has been employed in one of the principal hotels of this city for many years, and by frugal economy has accumulated considerable means for one of his station in life. He confides in me, but is suspicious of others. His *speech* and *manner* betray *timidity* of mind and lack of resolution. He has *anthropophobia*, being afraid to meet any one about the house, as he says, and *polyphobia*, "afraid of everything, sometimes," to use his own language. He has also *phobophobia* being "afraid something is going to happen to frighten him."

His failure of memory is quite marked. So much so, that the ordinary orders in regard to trunks, to which he has been accustomed, he is obliged to note down at once, or he would forget the order and the number of the room in the house before reaching the latter, yet this failure of memory is secondary to his fear of forgetting and the indirect product of it, his mind being preoccupied with the fear of forgetting, so that the impression of office instructions are evenescent and indistinct by reason of this preoccupancy, for he bears in mind instructions concerning his medicine and hygienic advice and carries them out precisely.

His volition is impaired and quite abeyant to one who gets his confidence, so that, notwithstanding his suspiciousness, he can be unduly influenced.

He has improved some under systemic electricity, induced sleep, peptones, and reconstructives, but will likely pass into the insanity of premature senility, the consequence, in part at least, of over sexual strain. There is atheromatous degeneracy of the radials, an anæmic cardiac bruit, he has few remaining teeth and his skin is dry, harsh and shriveled.

This is not a case of neurasthenia pure and simple. It is a condition of greater gravity. Yet the morbid fears of neura trophia are marked and prominent. It is the neuratrophia of atheromatous degeneration of the cerebral vessels.

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